



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/054,994	01/25/2002	Naoki Kusunoki	218474US2	7728

22850 7590 08/04/2005

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

OSBORNE, LUKE R

ART UNIT PAPER NUMBER

2123

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/054,994

Applicant(s)

KUSUNOKI ET AL.

Examiner

Luke Osborne

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/25/02.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Status

Claims 1-20 are pending in the instant application.

Claims 1-20 stand rejected.

Foreign Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submission on 1/25/02 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the Examiner is considering the information disclosure statement.

Abstract

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Art Unit: 2123

The abstract of the disclosure is objected to because the abstract contains legal phraseology and form lines 4 and 7 exemplary. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 6-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation "said second physical quantity" in line 14. There is insufficient antecedent basis for this limitation in the claim.

Any claim not directly rejected on 35 U.S.C. 112, 2nd stands rejected due to its dependency.

The art rejections of the claim(s) listed above are applied as best understood in light of the rejection under 112, 2nd paragraph discussed above.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by "Modeling of Mechanical Stress in Silicon Isolation Technology and its Influence on Device Characteristics" by Hernan A. Rueda, 1999, hereafter "Rueda".

Regarding claim 1, Rueda discloses a simulation apparatus configured to estimate properties of a semiconductor device. See the Abstract and the corresponding portions of Rueda's dissertation for this teaching. In particular Rueda discloses, "A simulation apparatus configured to estimate properties of a semiconductor device comprising:

- a first calculating part configured to calculate a first value corresponding to a prescribed physical property value by taking a prescribed physical quantity into consideration, with regard to at least a partial region of said semiconductor device [Rueda: The contributions of each source can be simulated using different models that represent or approximate the physics involved. After the models are described and presented, example applications are provided to distinguish the advantages and limitations for each model. (Page ix)];
- a second calculating part configured to calculate a second value corresponding to said physical property value without taking said physical quantity into consideration, with regard to at least a partial region of said semiconductor device [Figure 2-8, simulated 0 strain], and
- a visualizing part configured to display, in a prescribed form, a correlation between said first and second values [Figure 2-8]" as claimed.

Regarding claim 2, Rueda discloses the simulation apparatus according to claim 1, "wherein said prescribed physical quantity is a stress distribution inside said semiconductor device occurring during a process of fabricating said semiconductor device [Figure 2-8: Hydrostatic strain as a linear function of boron concentration]" as claimed.

Regarding claim 3, Rueda discloses the simulation apparatus according to claim 2, "wherein said stress is a hydrostatic pressure obtained as an average value between the stress in a crosswise direction and the stress in a lengthwise direction [Figure 2-8 Hydrostatic strain as a linear function of boron concentration] as claimed" as claimed.

Regarding claim 4, Rueda discloses the simulation apparatus according to claim 1, "wherein said physical property value is a value relating to at least one of a mobility of carriers [1.3.1 Carrier Mobility Influences pages 8-10], a carrier trap, a fixed electrical charge, a tunnel probability, a lifetime of carriers, generation-extinction speed of pair of carriers, a diffusion coefficient [1.2.2 Diffusion Influences pages 6-7] and a viscous coefficient [A common constitutive relationship for a viscous body is the Newtonian fluid. In a Newtonian relationship, the shear stress on the surface is linearly proportional to the rate of deformation [30] (Page 27, and equation 2-16)]" as claimed.

Regarding claim 5, Rueda discloses the simulation apparatus according to claim 1, "wherein said visualizing part illustrates changing amount of said first value relative to said second value, with regard to at least a partial region of said semiconductor device [Figure 2-8 Hydrostatic strain as a linear function of boron concentration]" as claimed.

Claim 6 contains the same limitation as claim 1 thus is rejected for the same reasons as claim 1.

Claims 7, 9, 11 contain the same limitations as claims 2 and 4, thus are rejected for the same reasons as claims 2 and 4.

Claims 8, 10, 12 contain the same limitations as claim 3, thus are rejected for the same reasons as claim 3.

Claim 13 contains the same limitations as claim 1 where the seconds correlation calculating part is equal to the first calculating part, thus is rejected for the same reasons as claim 1.

Regarding claim 14, the visualizing part of claim 13 contains the limitation for claim 14, for the reasons presented for claim 13.

Claims 15, 16, contain the same limitations as claim 3 thus are rejected for the same reasons as claim 3.

Claim 17 contains the same limitations as claim 4, thus is rejected for the same reasons as claim 4.

Claims 18-20 recite the method of apparatus claims 1, 6, 13, thus are rejected for the same reasons as claims 1, 6, 13.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO form 892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luke Osborne whose telephone number is (571) 272-4027. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

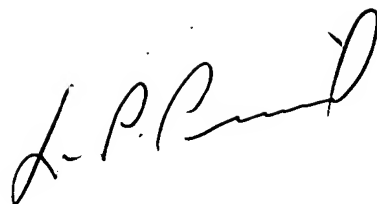
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/054,994

Page 8

Art Unit: 2123

LRO

A handwritten signature in black ink, appearing to read "L. P. Picard", written in a cursive style.

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100